

TWO LETTERS

From the Right Reverend

Dr. GEORGE BERKELEY, *K*

Lord Bishop of CLOYNE,

The one to *Thomas Prior, Esq;*

Concerning the

Usefulness of Tar-water in
the PLAGUE.

(Wherein also it is considered,

Whether Tar-Water, prepared with the distilled Acid of Tar, should be preferred to that made in the common Way, by mixing Tar with Water, and stirring them together.)

The other to the Rev. Dr. *Hales,*

ON THE

Benefit of Tar-water in FEVERS,
for *Cattle* as well as the Human Species.

Published at his LORDSHIP's Desire, on Occasion of
the present Distemper among the Cattle, and
for the general Good of Mankind.

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*They provoked him to Anger with their own
Inventions, and the Plague brake in
upon them. Pf. cvi. § 29.*

A
L E T T E R

TO
THOMAS PRIOR, Esq;

YOU observe in a late letter of yours, that I had formerly hinted, Tar-water might be useful in the Plague; and desire to know the reasons whereon my opinion was grounded, and that I would communicate my thoughts at large on the subject. I am the more willing to satisfy you in this particular, as the Plague now raging in *Barbary* hath in some measure alarmed the publick, and I think it may not be amiss to

contribute my mite of advice towards averting or lessening the present danger ; and, as fear begets caution, to possess my countrymen with an apprehension of this the greatest of all temporal calamities, sufficient to put them on their guard, and prepare them against the worst that can happen.

A learned physician of our own observes, that the plague does not visit these *Britannic* Islands oftener than once in thirty or forty years, and it is now above twice that time since we felt the hand of the destroying angel.

It is also the opinion of physicians, that the infection cannot spread, except there is a suitable disposition in the air to receive it ; the signs of which are wet summers, leaves and fruits blasted, an unusual quantity of insects, epidemical distempers among the cattle, to which, I presume,

sume, may be added long easterly winds, all which signs seem to have discovered themselves pretty plainly in the course of this present year.

Beside these natural forerunners of a plague or pestilence in the air, it is worth observing, that a prognostic may be also made from the moral and religious disposition of the inhabitants. Certainly that the *digitus Dei* the (τὸ θεῖον of *Hippocrates*) doth manifest itself in the plague, was not only the opinion of mankind in general, but also in particular of the most eminent physicians throughout all ages down to our own. How far we of these islands have reason to expect this messenger of divine vengeance, will best appear if we take a view of the prevailing principles and practices of our times, which many think have long called aloud for punishment or amendment.

Isle of

Analogy

Analogy and probability prevail in medicine: these are the proper guides where experience hath not gone before. I knew that tar-water was useful to prevent catching the small-pox, and consequently that its nature was contrary to the taint or venom producing that distemper; and therefore I concluded, that it might be usefully applied to cure the same, though I never heard nor knew that it had been applied to that purpose, and the success answered my hopes.

In like manner, having known the virtue of tar-water in preserving from epidemical infection, I conceive in general it may be useful for the cure of distempers caused by such infection. Besides, being very well assured that tar-water was sovereign in the cure of all sorts of fevers, I think it not unreasonable to infer, that it may prove a successful

cessful medicine for the Plague although I had never known it used in that distemper, forasmuch as the Plague with all its symptoms may be considered as a species of fever, and hath been actually considered as such both by *Hippocrates* and *Sydenham*, not to mention others.

Having observed surprising effects of tarwater in the most deplorable cases, for instance, pleurifies, small-pox, spotted and erysipelatous fevers, I am induced to entertain great hopes of its success in pestilential fevers or plagues; which are also confirmed, by its operating as a powerful diaphoretic and sudorific, when given warm and in great quantities. Add to this, that it frequently throws out pustules and ulcers, and is apt to terminate the worst of fevers by an eruption of boils in various parts of the body; that it raises the spirits, is a great alex-

alexipharmacum and cordial, and must therefore be of the greatest use in malignant cases.

In cachexy, scurvy, gout, as well as in the close of fevers, I have often known tar-water cause troublesome eruptions or boils (the very method taken by nature in casting forth the venom of the Plague) to break out in the surface of the body, expelling the morbidic humours, the cause and reliques of the disease, to the signal benefit of the patients ; except such who, being frightened at the symptoms, have supposed the tar-water to produce those humours which it only drives out, and in consequence of such their groundless suspicion, laid it aside, or perhaps took other medicines to hinder its effect, and thereby deprived themselves of the benefit they might otherwise have received.

In the Plague are observed head-achs, drowfiness; anxiety, vigils, sinking of spirits, and weakness, for all which Tar-water hath been found an effectual remedy. Bloody urine and spitting blood, which are also dangerous symptoms observed in the plague, have been often removed by the same medicine, which from numberless experiments I have found to be peculiarly fitted for purifying and strengthening the blood, and for giving it a due consistence, as well as a proper motion.

In the Plague, pleurifies are esteemed mortal symptoms, and in the cure of these, I never knew tar-water fail, if given warm in bed, a pint or more an hour, though the patient was neither bled nor blistered. The carbuncles and spots which shew themselves in the Plague are of a gangrenous nature, tending to mortification. And gan-
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grees I have known effectually cured by copious drinking of Tar-water.

An erysipelas, which sheweth a degree of malignity nearest to the Plague, is easily cured by plentiful drinking of Tar-water. I knew a person, who had been six weeks ill of an erysipelas under the care of a celebrated physician, during which time she struggled with many dangerous symptoms, and hardly escaped with life. This person was a year after seized again in the same manner, and recovered in a week, by the sole use of Tar-water. Constiveness is reckoned a very hopeful prognostic in the Plague; and it is also a symptom which often attends the drinking of Tar-water, when it throws out the venom of a distemper thorough the skin.

Diseases of the same season generally bear some affinity to each other

other in their nature and their cure ; and it may not be improper on this occasion to observe, that the reigning distemper of the black cattle hath been often cured by Tar-water, and would (I am persuaded) have done much less mischief, if the practice had been general, to have given each distempered beast three gallons the first, two the second, and one the third day, in warm doses, (from a pint to a quart) and at equal intervals.

Diemerbroeck recommends in the first appearance of a Plague the use of sudorifics, putting the patient to bed, and covering him warm, till a copious sweat be raised, the very method I constantly follow in the beginning of fevers, using no other medicine than Tar-water, which, after numberless experiments, I take to be the best sudorific that is known, inasmuch as it throws out the mor-

bific *miasma*, without either heating the patient or weakening him, the common effects of other sudorifics, whereas this, at the same time that it allays the feverish heat, proves a most salutary cordial, giving great and lasting spirits.

Upon the whole, I am sincerely persuaded, that for cure of the Plague there cannot be a better method followed, more general for use, more easy in practice, and more sure in effect, than to cover the patient warm in bed, and to make him drink every hour one quart of warm Tar-water, of such strength as his stomach is able to bear; a thing not so impracticable as it may seem at first sight, since I have known much more drank in fevers even by children, and that eagerly and by choice, the distemper calling for drink, and the ease it gave encouraging to go on. This
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for the cure ; but I conceive that one quart *per diem*, may suffice for prevention ; especially if there be added an even temper of mind, and an exact regimen, which are both highly useful against the Plague. For carbuncles and buboes I would recommend a liniment of the oil of Tar, or a plaster of pitch mixed with Tar, which last was used by the vulgar in the *Dutch* Plague described by *Diemberbroeck*.

It has pleased divine providence to visit us not long since, first, with famine, then with the sword ; and if it shall please the same good providence yet further to visit us for our sins, with the third and greatest of human woes, this, by God's blessing, is the course I mean to take for myself and family ; and and if generally practised, it would, I doubt not, (under God) save the lives of many thousands ; whereof
being

being perswaded in my own mind, both from the many trials I have made of Tar-water, and the best judgment and reasonings I could form thereupon, I think myself obliged to declare to the world what I am convinced of myself.

And I am the rather moved to this by the great uncertainty and disagreement among physicians, in their methods of treating the Plague. *Diemerbroeck*, for instance, a physician of great experience in the *Dutch* Plague, that raged about eighty years ago, dissuades by all means from bleeding in that distemper. On the other hand, *Sydenham* recommends what the other disapproves. If we believe *Dr. Sydenham*, the free use of wine, as a preservative, hath thrown many into the Plague, who otherwise might have escaped. *Dr. Willis* on the contrary avers, that he knew many,
who

who being well fortified by wine, freely entered amongst the infected, without catching the infection.

Bleeding cools, but at the same time weakens nature. Wine gives spirits, but heats withal. They are both therefore to be suspected; whereas Tar-water cools without weakening, and gives spirits without heating, a sure indication of its sovereign virtue in all inflammatory and malignant cases, which is confirmed by such numbers of instances, that matter of fact keeps pace (at least) with reason and argument in recommending this medicine.

Plagues as well as fevers are observed to be of different kinds; and it is observed of fevers, that, as they change their genius in different seasons, so they must be treated differently, that very method that succeeded in one season often proving hurtful in another. Now it is very remarkable, that Tar-water

ter has been known to vary its working, and wonderfully adapt itself to the particular case of the patient, a thing I frequently have experienced.

Last spring two children, a boy and a girl, the former ten years old, the latter eight years old, were seized with fevers; the boy had an inflammation in his breast. In less than two hours they drank each about five quarts of warm Tar-water, which wrought them very differently, the girl as an emetic, the boy as a gentle purge, but both alike immediately recovered, without the use of any other medicine: of this I was an eye-witness, and I have found by frequent experience, that the best way is, to let this medicine take its own course, not hindered nor interrupted by any other medicines; and this being observed, I never knew it to fail so much as

once,

once, in above a hundred trials in all sorts of fevers.

Nevertheless there are not wanting those who would insinuate, that Tar-water made in the common way contains noxious oils or particles of tar, which render it dangerous to those who drink it, a thing contrary to all my experience. This was the old objection made by those who opposed it from the beginning. But I am convinced by innumerable trials, that Tar-water is so far from doing hurt by any caustic or fiery quality, that it is on the contrary a most potent medicine for the allaying of heat, and curing of all inflammatory distempers. The perpetual returning to the same objection makes it necessary to repeat the same answer.

And yet, some who are not afraid to argue against experience, would still persuade us that the common

Tar-water is a dangerous medicine, and that the acid freed from the volatile oil is much more safe and efficacious : but I am of opinion, that being robbed of its fine volatile oil (which neither sinks to the bottom nor floats at the top, but is throughout and intimately united with it, and appears to the eye only in the colour of Tar-water) being robbed, I say, of this oil, it is my opinion it can be no cordial, which opinion (not to mention the reason of the thing) I ground on my own experience, having observed that the most acid water is the least cordial ; so far am I from imputing the whole virtue to the acid, as some seem to think.

It seems not very reasonable to suppose, that the caustic quality of Tar-water (if such there was) should be removed or lessened by distillation, or that a still should furnish a cooler .

cooler and better medicine than that which is commonly prepared by the simple affusion and stirring of cold water. However the ends of chymists or distillers may be served thereby, yet it by no means seemeth calculated for the benefit of mankind in general, to attempt to make people suspect, and frighten them from the use of a medicine, so easily and so readily made, and every where at hand, of such approved and known safety, and at the same time recommended by cures the most extraordinary, on persons of all sexes and ages, in such variety of distempers, and in so many distant parts of Christendom.

By most men, I believe, it will be judged, at best, a needless undertaking, instead of an easy-tryed medicine, to introduce one more operative and expensive, unsupported by

experiments, and recommended by wrong suppositions, that all the virtue is in the acid, and that the Tar-water being impregnated with volatile oil is caustic, which are both notorious mistakes.

Though it be the character of resin not to dissolve and mix with water as salts do, yet these attract some fine particles of essential oil, which serves as a vehicle for such acid salts; and the colour of the Tar-water sheweth the fine oil, in which the vegetable salts are lodged, to be dissolved and mixed therein. The combination of two such different substances as oil and salt constitutes a very subtile and active medicine, fitted to mix with all humours, and resolve all obstructions, and which may properly be called an acid soap.

Tar-water operates more gently and safely, as the acid salts are sheathed

sheathed in oil, and thereby losing their acrimony, approach the nature of neutral salts, and so become more friendly to the animal system. By the help of a smooth insinuating oil, these acid salts are more easily and safely introduced into the fine capillaries. I may add, that the crasis of the blood is perfected by Tar-water, being good against too great a solution and fluidity as a balsam, and against viscosity as a soap, all which entirely depends upon the mixture of oil with the acid, without which it could neither operate as a balsam nor a soap; briefly, it was not mere acid or distilled water, or tincture of tar, but Tar-water, as commonly made, by affusion and stirring of cold water upon tar, which hath wrought all those great cures and salutary effects, which have recommended

mended it is a medicine, to the general esteem of the world.

The mixture of volatile oil, which is or contains the spirit, is so far from noxious, that it is the very thing that makes Tar-water a cordial; this gives it a grateful warmth, and raiseth the spirits of the hysteric and hypochondriacal; this also rendering the blood balsamic, disposeth wounds of all sorts to an easy cure; this also it is that fortifies the vitals, and invigorates nature, driving the gout to the extremities, and shortening the fits, till it entirely subdues that obstinate and cruel enemy, as it hath been often known to do; but acid alone is so far from being able to do this, that on the contrary the free use of acids is reckoned amongst the causes of the gout.

I never could find that the volatile oil drawn from Tar by the affusion

sion of cold water produced any inflammation, or was otherwise hurtful, not even though the water by longer stirring had imbibed far more of the oil than in the common manner, having been assured, that some of strong stomachs have drank it after twenty minutes stirring without any the least harm, and with very great benefit.

It hath been indeed insinuated, that the oil was ordered to be skimmed off, because it is caustic and dangerous ; but this is a mistake. I myself, among many others, drank the Tar-water for two years together, with its oil upon it, which never proved hurtful, otherwise than, as being somewhat gross, and floating on the top, it rendered the water less palatable, for which reason alone it was ordered to be skimmed.

It

It hath also been hinted, that making Tar-water the second time of the same tar was cautioned against, for that it was apprehended such water would prove too heating; which is so far from being true, that when I could not get fresh tar, I used the second water without difficulty, by means whereof it pleased God to recover from the small-pox two children in my own family, who drank it very copiously: a sufficient proof that it is not of that fiery caustic nature which some would persuade us.

The truth is, my sole reason for advising the tar not to be used a second time, was because I did not think it would sufficiently impregnate the water, or render it strong enough, after so much of the fine volatile parts had been carried off by the former infusion. Truth obligeth me to affirm, that there is no
danger

danger (for as much as I could ever observe) to be apprehended from Tar-water, as commonly made ; the fine volatile oil, on which I take its cordial quality to depend, is, in its own nature, so soft and gentle, and so tempered by the acid, and both so blended and diluted with so great a quantity of water, as to make a compound, cherishing and cordial, producing a genial kindly warmth without any inflaming heat ; a thing I have often said, and still find it necessary to inculcate.

Some medicines indeed are so violent, that the least excess is dangerous ; these require an exactness in the dose, where a small error may produce a great mischief. But tar is, in truth, no such dangerous medicine, not even in substance, as I have more than once known it taken innocently, mixed with honey, for a speedy cure of a cold.

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But notwithstanding all that hath been said on that subject, it is still sometimes asked, What precise quantity or degree of strength is required? To which I answer, (agreeably to what hath been formerly and frequently observed) the palate, the stomach, the particular case and constitution of the patient, the very climate or season of the year, will dispose and require him to drink more or less in quantity, stronger or weaker in degree. Precisely to measure its strength by a scrupulous exactness, is by no means necessary. Every one may settle that matter for himself, with the same safety that malt is proportioned to water in making beer, and by the same rule, to wit, the palate.

Only in general thus much may be said, that the proportions I formerly recommended will be found agreeable to most stomachs, and
withal

withal of sufficient strength, as many thousands have found, and daily find, by experience. I take this opportunity to observe, that I use Tar-water made in stone-ware or earthen very well glazed, earthen vessels unglazed being apt to communicate a nauseous sweetness to the water.

Tar-water is a diet-drink, in the making whereof there is great latitude, its perfection not consisting in a point, but varying with the constitution and palate of the patient, being nevertheless, at times, taken by the same person, weaker or stronger, with much the same effect, provided it be proportionably in greater or lesser quantity. It may indeed be so very weak as to have little or no effect ; and, on the other hand, so very strong, as to offend the stomach ; but its degree of strength is easily discerned

by the colour, smell, and taste, which alone are the natural and proper guides whereby to judge thereof; which strength may be easily varied, in any proportion, by changing the quantity either of tar, or water, or the time of stirring. As for setting Tar-water to stand, this is not to make it stronger, but more clear and palatable.

I found myself obliged to assert the innocence and safety, as well as usefulness of the Tar-water, as it is commonly made by the methods laid down in my former writings on this subject; and this not only in regard to truth, but much more in charity to a multitude, which may otherwise perhaps be influenced by the authority of some, who endeavour to put them out of conceit with a medicine so cheap, so efficacious, and so universal, by suggest-

ing and propagating scruples about a caustic quality arising from the volatile oily particles of tar, or resin imbibed together with the acid in making Tar-water; an apprehension so vain, that the reverse thereof is true, for which I appeal to the experience of many thousands, who can answer for the innocence and safety, as well as efficacy, of this medicine, of which there are such ample and numerous certificates published to the world.

I shall finish my essay on the Plague, and its cure, with observing, that in case God should withhold his hand for the present, yet these reflections will not be altogether fruitless, if they dispose men to a proper temper of mind, and a cautious regimen, avoiding all extremes (which things are justly reckoned among

mong the chief preservatives against infection) but especially if the apprehension of this destroyer shall beget serious thoughts on the frailty of human life, and in consequence thereof, a reformation of manners ; advantages that would sufficiently repay the trouble of writing and reading this letter, even though the trial of Tar-water, as a remedy for the Plague, should be postponed (as God grant it may) to some future and distant opportunity.

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L E T T E R

T O T H E

Reverend Dr. H A L E S,

O N T H E

Benefit of Tar-water in FEVERS,
for *Cattle* as well as the Human Species.

TO one gallon of fresh Tar,
pour six gallons of cold wa-
ter; stir and work them strongly
together, with a large flat stick,
for the space of one full hour: let
the whole stand six or eight hours,
that the tar may subside; then
scum it, and pour off the water,
whereof three gallons warm are to
be given the first day, two the se-
cond, and one the third day, at
equal

equal intervals, the dose not being less than a pint, nor more than a quart ; and the beast being all that time, and for two or three days after, kept warm, and nourished, if it will not eat hay, with mash or gruel.

I believe this course will rarely fail of success, having often observed Fevers in human kind to have been cured by a similar method. But, as in Fevers, it often throws out pustules or ulcers on the surface of the body, so in beasts it may be presumed to do the like ; which ulcers, being anointed with a little tar, will, I doubt not, in a short time, dry up and disappear.

By this means the lives of infected cattle may be preserved at the expence of a gallon of tar for each. A thing which I repeat and incul-

inculcate, not only for the sake of the cattle, and their owners, but also for the benefit of mankind in general, with regard to a Fever: Which terrible subduer and destroyer of our species, I have constantly found to be itself easily subdued by Tar-water. Nevertheless, though in most other cases I find that the use of this medicine hath generally obtained, yet in this most dangerous and frequent case, where its aid is most wanted, and at the same time most sure, I do not find that the use thereof has equally obtained abroad in the world.

It grieves me to think that so many thousands of our species should daily perish, by a distemper which may be easily cured by a remedy so ready at hand, so easy to take, and so cheap to purchase as Tar-

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water,

water, which I never knew to fail, when copiously drank, in any sort of Fever. All this I say, after more than an hundred trials, in my own family and neighbourhood.

But whatever backwardness people may have to try experiments on themselves, or their friends, yet it is hoped they may venture to try them on their cattle, and that the success of such trials in Fevers of brutes (for a Fever it plainly is) may dispose them to probable hopes of the same success in their own species.

Experiments, I grant, ought to be made with caution, and yet they may be made, and actually are made every day on probable reasons and analogy. Thus, for instance, because I knew that Tar-water was cordial and diaphoretick,
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and yet no inflamer, I ventured to give it in every stage of the small-pox, though I had never heard before of its being given otherwise than as a preservative against that distemper; and the success answered my expectation.

If I can but introduce the general use of Tar-water for this murrain, which is in truth a Fever, I flatter myself this may pave the way for its general use in all Fevers whatsoever.

A murrain among cattle hath been sometimes observed to be the forerunner of the Plague among men. If that should prove the present case (which God forbid) I would earnestly recommend the copious drinking of warm Tar-water, from the very first appearance of the symptoms of such Plague. I do also recommend it to be
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tried in like manner against the bite of a mad dog, when other approved medicines are not at hand.

F I N I S.

(*Lately Published*)

SIRIS, a Chain of Philosophical Reflexions and Inquiries concerning the Virtues of Tar-Water, and divers other Subjects connected together and arising one from another. By the Right Reverend Dr. GEORGE BERKELEY, Lord Bishop of *Clayne*, and Author of the *Minute Philosopher*. A new Edition, with Additions and Emendations.

An authentick Narrative of the Success of Tar-Water, in curing a great Number and Variety of Distempers, with Remarks, and occasional Papers relating to the Subject. To which are subjoined, two Letters from the Author of SIRIS, shewing the Medicinal Properties of Tar-Water, and the best Manner of making it. By THOMAS PRISON, Esq.